# Stereo Cassette Deck

Operating Instructions



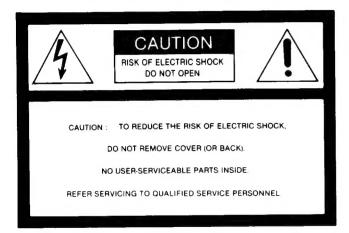
# Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model I	Vo.	Serial No.
INIOGELI	10	OCIIdi NO

# **WARNING**

To prevent fire or shock hazard, do not expose the unit to rain or moisture.





This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

#### **INFORMATION**

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment away from the receiver
Plug the equipment into a different outlet so that
equipment and receiver are on different branch circuits.
If necessary, the user should consult the dealer or an
experienced radio/television technician for additional
suggestions. The user may find the following booklet
prepared by the Federal Communications Commission
helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

<sup>\*</sup>The graphical symbols are on the rear enclosure.

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#### **Features**

- B and C type Dolby NR\* systems to reduce tape hiss noise.
- The Dolby HX PRO\* system which improves the linearity of the tape's high-range response during recording. (TC-WR710 only)
- Easy-to-read counter function ( digital on TC-WR710 and mechanical on TC-WR610) which shows the elapsed recording or playback time.
- · A relay function for long playback.
- Auto-synchro dubbling at normal or high (double) speed
- AMS and blank skip functions which provide easy access to a desired selection.
- \* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Band & Olufsen.
- "DOLBY" and the double-D symbol 🔲 are trademarks of Dolby Laboratories Licensing Corporation.

#### Differences between the TC-WR710 and TC-WR610

This instruction manual covers the TC-WR710 and the TC-WR610. The differences between them are:

- The TC-WR710 has a digital counter function for both decks A and B while the TC-WR610 has a mechanical counter function for deck B only.
- The TC-WR710 has the HX-PRO system and the TC-WR610 does not.

## **Precautions**

#### On safety

- . Operate the unit on 120 V AC, 60 Hz only.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

#### On operation

- When the unit is not being used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette, or if a cassette has been incorrectly inserted into the cassette holder.

#### On head cleaning

The heads and tape path should be cleaned after every 10 hours of operation. Dirty heads and a dirty tape path may cause:

Loss of high frequency response Loss of sound volume Sound drop-out

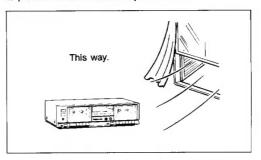
If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

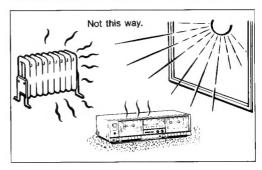
# Installation

#### Notes on installation

Place the unit in a location with adequate air circulation to prevent internal heat build-up in the unit.



Do not place the unit on a soft surface, such as a rug, that would block the ventilation holes on the bottom.



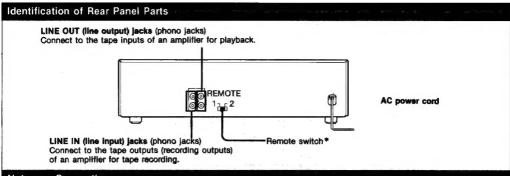
Install the unit with the front panel facing toward you.

Do not install the unit:

- -near heat sources such as radiators or air ducts.
- —in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- -in an inclined position.

Do not throw away the carton and the packing material! They will come in handy when transporting the unit or shipping it for servicing.

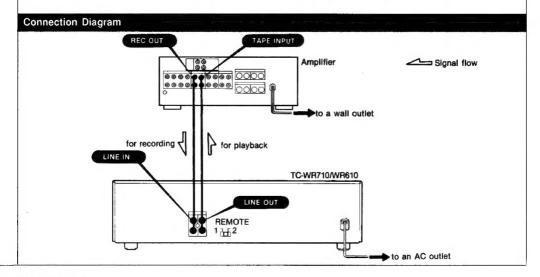
# Connections



#### **Notes on Connections**

- Turn off the power to all equipment before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pick-up.





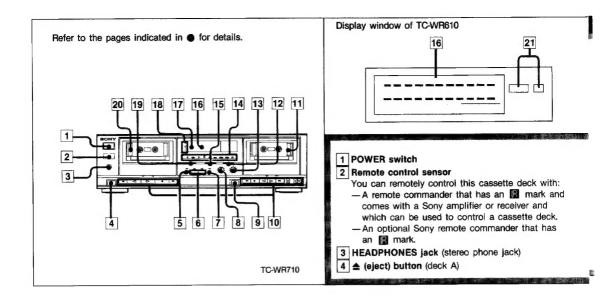
#### \* REMOTE switch

If you have a remote commander supplied with a Sony receiver or amplifier, you can control both decks by using the A/B deck selector.

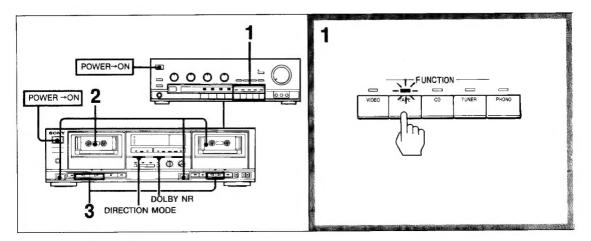
However, if your commander is not equipped with an A/B deck selector and controls only deck A, setting this switch will allow you to control both decks.

To do this, first turn the power off, then set the switch to REMOTE 2. (Under this setting, the commander controls the deck in which a cassette is loaded. If both decks are loaded, it controls only deck B.)

# Identification of Front Panel Parts



# Playback (On Either Deck A or B)



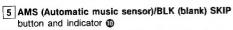
#### How to select DIRECTION MODE

To play back one side, select -...

When both decks A and B are in playback mode Only playback from deck A will be audible.

To play back both sides continuously\*, select .....

<sup>\*</sup> After playing back five times, the deck automatically stops.



- 6 SYNCHRO DUBBING button and indicators 10 HIGH SPEED/NORMAL SPEED
- 7 AUTO PAUSE button and indicator (
- 8 BALANCE control

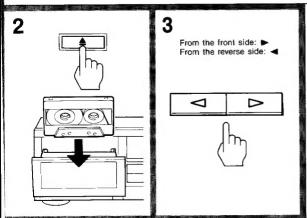
Adjusts the balance of right and left channels during recording.

- 9 **△** (eject) button (deck B)
- 10 Tape operation buttons
  - ◄ (left fast winding) button
  - rightward fast winding) button

  - ⊲ (reverse play) button
  - (stop) button
  - REC (RECORD) button (deck B only)
  - PAUSE button (deck B only)
  - O REC MUTE (record muting) button (deck B only)

- 11 Cassette holder (deck B)
- 12 TAPE (DECK B) selector (deck B only)
- 13 REC LEVEL (recording level) control ( )
- 14 Tape operation buttons and direction mode indicators
- 15 DOLBY NR switch ( To
- 16 PEAK LEVEL METERS @
- 17 DIGITAL COUNTER ( (TC-WR710 only)
- 18 COUNTER buttons @ (TC-WR710 only) RESET button/MEMORY button/A/B button
- 19 DIR (direction) MODE selector @ @
- 20 Cassette holder (deck A)
- 21 TAPE COUNTER and RESET button ®

(deck B only) (TC-WR610 only)



To stop playback, press . To stop for a moment during play (only on deck B), press II. To restart play, press !! again.

Cassette side being played back

A direction mode indicator illuminates to indicate the side of the cassette being played back or recorded.

# Playing Back Both Decks in Succession (from Deck A to B or Vice Versa)—Relay play 1 3

#### How to use the DOLBY NR switch

Set the DOLBY NR switch to the same system that was used when the cassette was recorded.

Dolby NR system	Switch setting	
B type	B	
C type	C	
OFF	OFF	

#### What is the Dolby NR system?

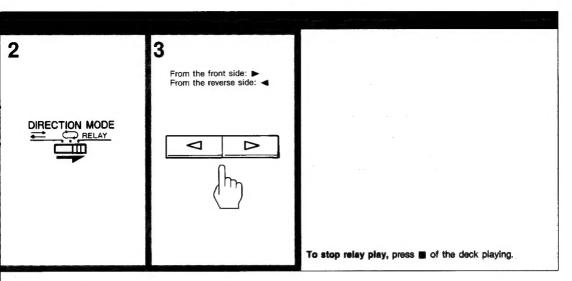
The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and then lowering them during playback.

# Select the appropriate TAPE selector position when you use deck B

- Cassette tapes can be classified into four major types: TYPE I, II, III and IV. TYPE I, II and IV cassette tapes can be used with this unit.
- Characteristics of the cassette tapes within each type may vary slightly depending on manufacturer or grade.
- The following reference table shows the classification of Sony cassette tapes.

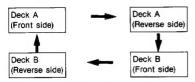
Tape type	Tapes (C30-C90)	
TYPE I (Normal)	SONY: EF, HF, HF-S, HF-ES Others TYPE I equivalent tapes (For 120 µs EQ, NORMAL BIAS)	
TYPE II (CrO <sub>2</sub> )	SONY: UX, UX-S, UX-ES, US-PRO Other TYPE II equivalent tapes (For 70	
TYPE IV (Metal)	SONY: METAL-ES Other TYPE IV equivalent tapes (For 70 µs EQ, METAL BIAS)	

When using deck A, the automatic tape type detection system adjusts the equalization setting to the optimum according to the type of cassette the system detects.



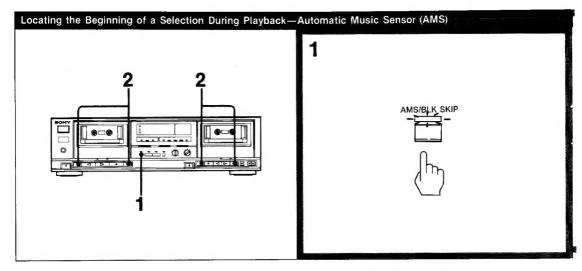
#### Playback sequence of relay play

Relay play follows the sequence below regardless of where playback starts.



#### To play back more than two cassettes in succession

Replacing cassettes that have finished playing with new ones allows you to play back two or more cassettes alternately on each deck.



#### What is the AMS?

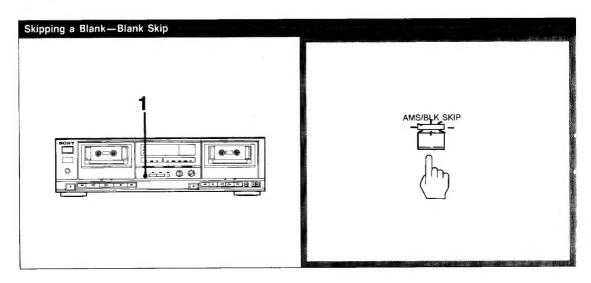
It detects the blank space between selection and locates the beginning of a selection during playback. To assure correct operation of the AMS, there must be a blank of 4 seconds or longer between selections.

# If the $\blacktriangleright\blacktriangleright$ or $\blacktriangleleft\blacktriangleleft$ button is pressed immediately before the following selection

The AMS may locate selection after the one immediately following.

#### The AMS will treat the following as blanks:

- -a long pause in the music
- -a passage of low frequencies or very low volume
- —a passage of gradual increase or decrease of volume Should the above happen, press AMS/BLK SKIP to deactivate the function.



# Check the direction indicator and press ▶▶ or ◀◀ referring to the following table.

Direction	Desired selection		
mode Indicator	Next selection	Selection being played	
FWD	<b>&gt;&gt;</b>	44	
REV	**	<b>*</b>	

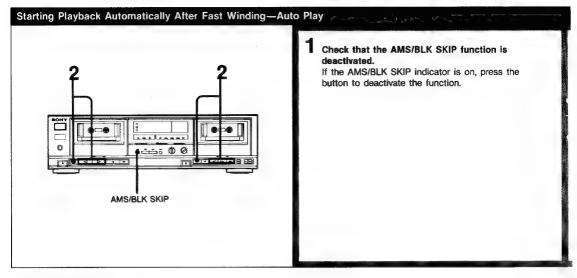
#### The AMS does not function on both decks simultaneously

- The AMS is activated for the deck whose ▶ or ◄ button is pressed first.
- If the AMS is activated for deck B during playback on deck A, deck B fast winds to the beginning of the selection and stops. If the AMS is activated for deck A during playback on deck B, deck A fast winds to the beginning of the selection and begins playback. The sound from deck B will be cut off when playback begins on deck A.

#### The AMS may not operate

- If there is noise in the space between selections
- If the space is less than 4 seconds long.

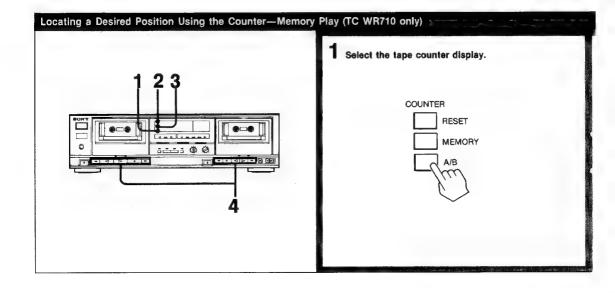
The deck automatically enters the fast winding mode where there is a blank of approx. 10 seconds or more. Playback begins when a new selection starts.



If playback starts in the middle of a selection when you try to do auto play

AMS function is activated (AMS/BLK SKIP indicator is on).

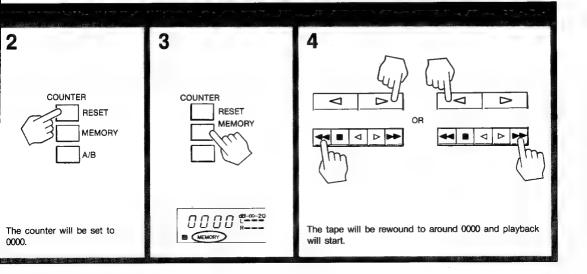
Press AMS/BLK SKIP to deactivate the function.



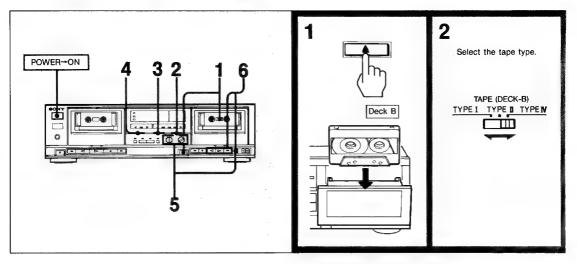
2 You can automatically start playback from the beginning following fast winding.

From the beginning of the front side, press ▷ while keeping ◄◄ pressed.

From the beginning of the reverse side, press ◄ while keeping ▶▶ pressed.



# Recording (Only on Deck B)



How to use the TAPE switch (Step 2) and the DOLBY NR switch (Step 3)

See page 8.

#### How to select DIRECTION MODE (Step 4)

To record on one side, select == .

To record on one side and then the other, select .

Even at the position, recording automatically stops when the tape reaches the end of the reverse side.

#### To start recording (Step 6)

To start recording from the front side, press ▷ while keeping ● pressed.

To start recording from the reverse side, press < while keeping ● pressed.

#### How to start recording more precisely

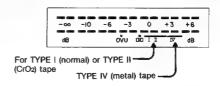
- 1 Press II.
- 2 Press ▷ or ◁, keeping pressed.
- 3 Press II again at the desired point.

The direction mode indicator blinks when ● is pressed Recording is possible only on side(s) indicated by a blinking indicator. If a cassette tab has been removed to prevent accidental erasure, the indicator for that side will not blink.

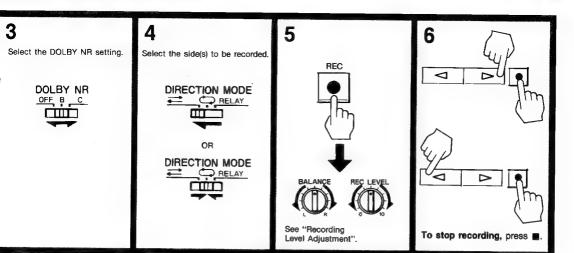
#### Recording Level Adjustment -

Adjust the recording level according to the tape type by observing the PEAK LEVEL METER and referring to the diagram on the right.

#### Recommended maximum PEAK LEVEL METER reading



If the recording level frequently exceeds the range for the tape type, the level is too high.



# If the side whose tab has been removed is selected for recording

The deck will start playback instead of recording.

# When you select \( \sigma \) with the DiR MODE selector for recording

The deck will stop at the end of the reverse side of the tape even if the position is specified by the DIR MODE selector.

#### Note

Playback from deck A is not output while deck B is the recording.

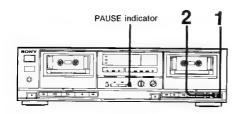
#### Tips on recording level adjustment

- Adjust the recording level as high as possible without causing distortion in the recorded sound.

  If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

#### Inserting a Blank Space during Recording-Record Muting

Using the O button during recording, you can insert a blank space on the tape to help you locate a selection (AMS function, see page 10). In addition, this function enables you to eliminate unwanted input by replacing it with a blank space.



#### 1 While recording, press O.

If you want the blank to be four seconds long, press and release the button immediately.

The PAUSE indicator will flicker and no incoming signals will be recorded on the tape.

After four seconds, the tape will pause

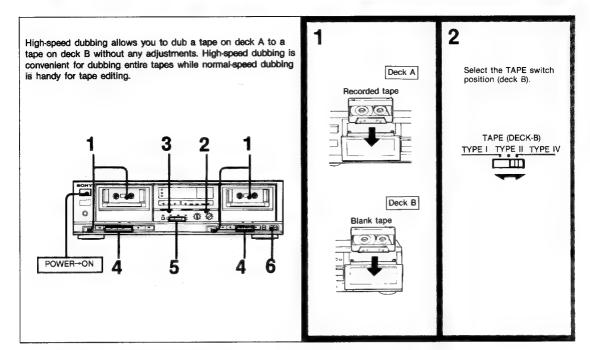
automatically and the indicator will light up.

If you want the blank to be longer, keep pressing for as long as you want. After four seconds the RAUSE

If you want the blank to be longer, keep pressing for as long as you want. After four seconds, the PAUSE indicator flickers more rapidly. When you release O, the unit goes into the pause mode.

2 Press II to resume recording.

# Tape Dubbing (from Deck A to Deck B)



To stop dubbing

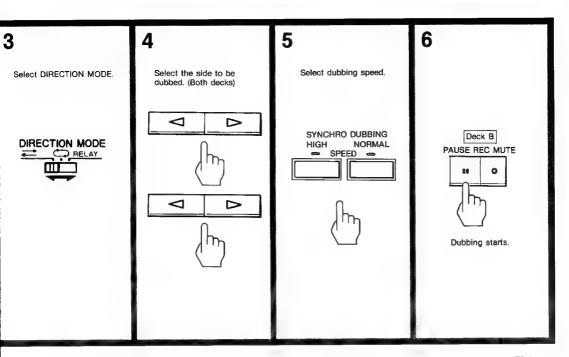
During normal-speed dubbing, press ■ on deck B. During high-speed dubbing, press ■ on either deck A or B

How to select DIRECTION MODE (Step 3)

To dub on one side of the cassette:

To dub on both sides of a cassette

Dubbing the reverse side starts independently of deck A: Dubbing of the reverse side starts simultaneously with deck A: RELAY



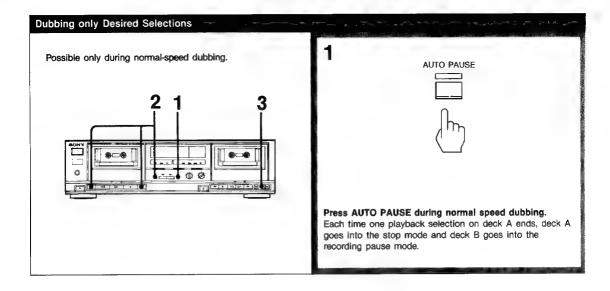
 $\overline{\textbf{Is}}$  it necessary to adjust the recording level and select the Dolby NR system?

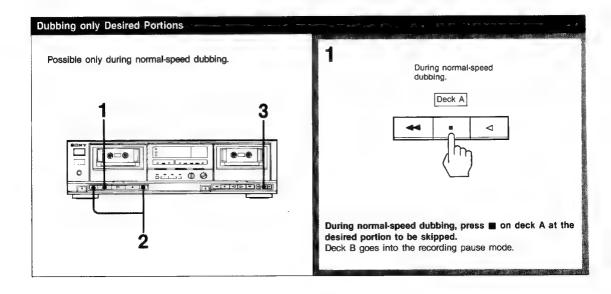
No. Because the tape in deck B is recorded with the same recording level and Dolby noise reduction system as the original tape in deck A.

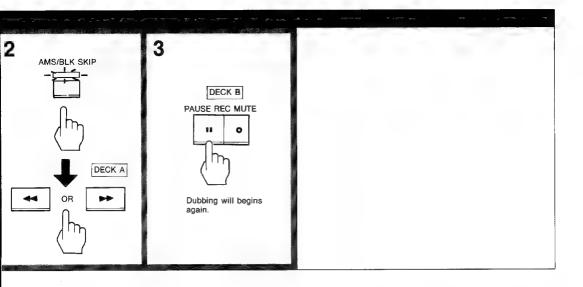
During high-speed dubbing
Only the button is operative.

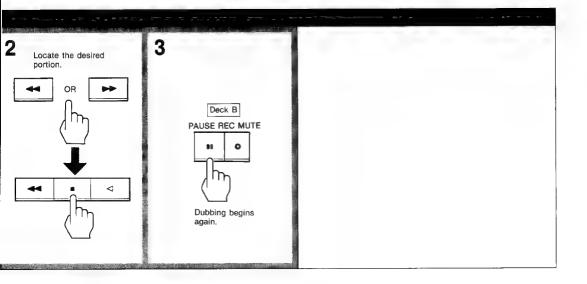
If the indicator on either the NORMAL or HIGH SPEED button blinks three times

The tab(s) of the cassette inserted into deck B has (have) been removed. Dubbing is not possible on that cassette. Cover the slot(s) with plastic tape (see page 20).



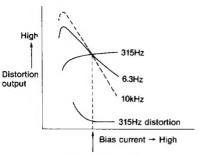






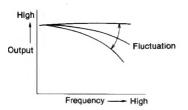
# What is Dolby HX PRO system?

This system provides improved linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.



Established bias current

As shown above, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current. In conventional systems, the bias current is susceptible to variations in certain recording signals (see diagram below) which may cause fluctuations in frequency response, distortion, or other unwanted characteristics.

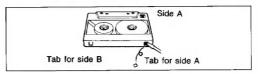


With the Dolby HX PRO System, the effective bias is controlled in millisecond units to greatly reduce distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

# Notes on Cassettes

#### To prevent accidental erasure

To protect the recording or either side A or B Break out the tab for the respective side.



#### To reuse a cassette

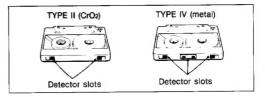
Cover the respective tab with plastic tape.



Cassettes exceeding 90 minutes are not recommended except for long continuous recording and playback Cassettes exceeding 90 minutes use extremely thin tape which tangles easily when the tape transport is stopped and started frequently.

# When using TYPE II (CrO<sub>2</sub>) or TYPE IV (metal) cassettes

Be careful not to cover the detector slots which are necessary for automatic tape type detection of deck A.



#### Cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or moisture.

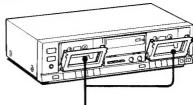
#### Maintenance

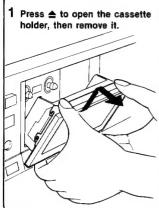
#### Cleaning the Heads and Tape Path (both decks)

Clean all surfaces over which the tape travels after every 10 hours of operation. Otherwise, the following symptoms might appear.

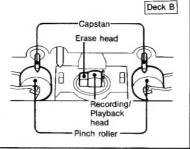
- -low-quality sound
- -a decrease in sound level
- -excessive wow, flutter or dropout
- -incomplete erasure
- -recording cannot be made

To obtain high-quality recording sound, cleaning before every recording is recommended.

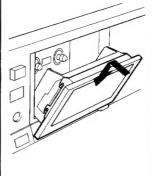




Wipe the heads, the pinch rollers and the capstans with a cleaning tip slightly moistened with tape cleaning fluid or alcohol.



3 Replace the cassette holder.



#### Demagnetizing the Heads (both decks)

After 20 or 30 hours of use, or when you notice hiss and/or loss of high frequencies, the residual magnetism built up on the heads should be removed.

- 1 Turn off POWER
- 2 Demagnetize the heads with any commercially available demagnetizer.

Refer to the instruction manual of the demagnetizer for detailed instructions.

#### Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution.

#### Important

Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzine.

# **Specifications**

Recording system

4-track 2-channel stereo

Fast winding time

Approx. 90 sec. (with HF-60 cassette)

AC Bias

Bias Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	58 dB	65 dB	71 dB
TYPE II (Sony UX-S)	57 dB	64 dB	70 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

Total harmonic distortion

1.0 % (with Sony METAL-ES cassettes)

#### Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	30-15,000 Hz (±3 dB) 30-13,000 Hz (0VU recording)
TYPE II cassette (Sony UX-S)	30-15,000 Hz (±3 dB)
TYPE I cassette (Sony HF-S)	30-14,000 Hz (±3 dB)

Wow and flutter 0.09% WRMS (NAB)

#### Inputs

,	Sensitivity	77.5 mV (-20 dB)
(phono jacks)	Input impedance	50k ohms

#### Outputs

Line outputs (phono jacks)		0.44 V (-5 dB) at a load impedance 47k ohms
	Load impedance	Over 10k ohms
Headphone output (stereo phone  ack)		0-0.3 mW at a load impedance of 32 ohms

General

Power requirements

120 V AC, 60 Hz

Power consumption

26 watts

Approx. 430×118×275 mm (w/h/d) Dimensions

 $(17 \times 4^{3}/_{4} \times 10^{7}/_{8} \text{ inches})$ 

including projecting parts and controls

Weight Approx. 4.3 kg (9 lbs 8 oz)

Supplied accessory

Audio connecting cord (2)

Design and specifications subject to change without notice.

# **Troubleshooting Guide**

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer. Before proceeding with these trouble checks, first check these basic points:

- . The power cord is firmly connected.
- · Amplifier connections are firmly made.
- · Heads, capstans and pinch rollers are clean.
- . The amplifier controls and switches are set correctly.

Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
<ul> <li>button does not activate.</li> </ul>	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape. (page 20)
Automatic shut-off mechanism activates	Tape is slack.	Take up the tape slack.
before the tape comes to its end.	Cassette shell is deformed.	Use another cassette.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise during fast winding	This depends on the cassette used and is not a problem.	_

Symptom	Cause	Remedy
Auto reverse function does not operate.	DIR MODE selector is set to	Set DIR MODE to .
Recording or playback cannot be made or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly. (page 5)
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions shown on page 21
Imcomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switch.	When playing back, set the switch to the same position used in recording.
	Improper setting of the TAPE selector.	If recorded with the wrong switch setting, adjust the tone controls of the amplifier in playback.
	The unit is placed near a television set.	Move the unit away from the television set.
The desired selection cannot be located even if you activate the AMS.	<ul> <li>There is noise in the space between selections.</li> </ul>	_
	The space is less than 4 seconds long.	Press O to insert a longer blank space.
	<ul> <li>The   or   button is pressed immediately before or after the beginning of the following selection.</li> </ul>	
Playback or fast winding may begin in the middle of the selection when AMS or blank skip is activated.	The following will be treated as blanks:  a long pause in the music  a passage of low frequencies or very low volume  gradual increase or decrease in volume	_

Noise			
Symptom	Cause	Remedy	
Hum noise	The unit is stacked on or under the amplifier.	Separate the units.	
Noise is recorded.	Recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.		